Asian Journal of Chemistry Vol. 6, No. 3 (1994), 728–730

NOTES

Synthesis and Antitubercular Activity of Some 4-Thiazolidinones

ANJANI SOLANKEE* and KISHORE KAPADIA
Department of Chemistry,
B.K.M Science College, Valsad-396 001, India.

Several 2, 3-disubstituted-5 [ω-carboxyhepty]-4- thiazolidinones have been prepared by condensing Schiff bases, from aryl amines and aryl aldehydes with 2- mercaptosebacic acid.

2, 3-Disubstituted 4-thiazolidinones are reported to exhibit anaesthetic[1], anti-convulsant[2] and hypnotic[3] activities. Surrey and Culter[4] prepared 2-aryl-3-[2-methoxy ethyl]-4-thiazolidnones. In light of the varied physiological activities such as antihistaminic[5], general adrenolytic[6] and local anaesthetic[7] activity, it was considered of interest to study the biological activity of the thiazolidinones. With this in view, 2, 3-disubstituted-5-[ω-carboxyheptyl]-4-thiazolidnones have been prepared.

Preparation of diester of sebacic acid and monoester of sebacic was carried out by reported methods[8, 9] 2-Bromosebacic acid was prepared by reported method[10].

Preparation of 2-mercaptosebacic acid

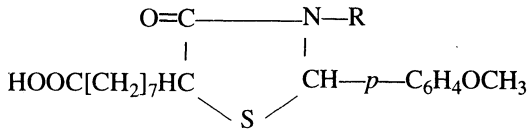
A mixture of 2-bromosebacic acid [0.02 mole] freshly distilled thiolacetic acid and dry ethylacetate [20 ml] was refluxed for 2 h. The mixture was then concentrated under reduced pressure. Crude acetyl derivative thus obtained was purified by benzene treatment, yield ~ 70%.

Preparation of 2-[4-methoxy phenyl]-3-substituted phenyl-5-[ω-carboxy heptyl]-4-thiazolidinones[1]

A mixture of *p*-methoxybenzaldehyde [0.02 mole] and different arylamines [0.02 mole] in dry benzene [25 ml] was refluxed under a Dean and Stark water separator. After the theoretical quantity of water was seperated [4–5 h], 2-mercaptosebacic acid [2.0 g] was added and refluxing was continued till no more water separated. The residue after removal of benzene was taken up in saturated solution of sodium bicarbonate and filtered. The filterate was acidified with hydrochloric acid. The product thus obtained was filtered and washed with water.

In order to synthesise 2-[4-methoxy phenyl]-3- substituted phenyl-5-[ω-carboxy heptyl]-4-thiazolidinones, 2-mercaptosebacic acid was allowed to react with some Schiff base to give the corresponding 4-thiazolidinone derivatives. The structure

of these compounds are supported by their analytical and spectral data. Compounds 4,6, 8 and 11 were screened for their antitubercular activity.



Screening for antitubercular activity

Compounds 4, 6, 8 and 11 were screened for antitubercular activity against $H_{37}R_v$ strain of Mycobacterium tuberculosis in Lowestein-jensen egg media at concentration level 3 and 30 μg ml^{-1}.

The retardation of growth was studied up to 4 weeks at 37°C. The antitubercular activity was compared with standard isonicotinic acid hydrazide (INH). The compounds revealed low inhibitory effect.

ANALYTICAL DATA AND ANTITUBERCULAR ACTIVITY OF 2-[4-METHOXY PHENYL] 3-SUBSTITUTED PHENL 5-[ω-CARBOXY HEPTYL] 4-THIAZOLIDINONES [I]

Compd. No.	R_2	M.P.(°C)	Yield %	Mol formula	Activity in μg ml
1.	$-C_6H_5$	124	68	$C_{24}H_{29}O_4NS$	
2.	$-CH_2C_6H_5$	126	70	$C_{25}H_{31}O_4NS$	
3.	$-o-C_6H_4CH_3$	108	67	$C_{25}H_{31}O_4NS$	
4.	$-m-C_6H_4CH_3$	127	75	$C_{25}H_{31}O_4NS$	+ +
5.	$-p-C_6H_4CH_3$	Limpid	65	$C_{25}H_{31}O_4NS$	
6.	$-o-C_6H_4Cl$	113.4	71	$C_{24}H_{28}O_4NSCl$	+ +
7.	$-m-C_6H_4Cl$	120	70	$C_{24}H_{28}O_4NSCl$	
8.	$-p-C_6H_4Cl$	135	70	$C_{24}H_{28}O_4NSCl$	+ +
9.	$-o-C_4H_4OCH_3$	119	75	$C_{25}H_{31}O_5NS$	
10.	$-m-C_6H_4OCH_3$	122.1	80	$C_{25}H_{31}O_5NS$	
11.	$-p-C_6H_4OCH_3$	127	80	$C_{25}H_{31}O_5NS$	+ +
12.	$-p-C_6H_4OC_2H_5$	122	65	$C_{26}H_{33}O_5NS$	
13.	$-p-C_6H_4Br$	105	75	$C_{24}H_{28}O_4NSBr$	
14.	$-1-C_{10}H_7$	130	75	$C_{28}H_{31}O_4NS$	
15.	$-2-C_{10}H_7$	123.4	70	$C_{28}H_{31}O_4NS$	

*R = $-p-C_6H_4[OCH_3]$ for compound 1–15.

ACKNOWLEDGEMENT

The authors are grateful to B.K.M. Science College authority for facilities provided. The authors are thankful to UGC, Delhi for JRF to one of us [AS]. The authors are indebted to Dr. S.B. Trivedi, Ex-Director, Tuberculosis Research Centre, Amargadh for biological screening.

REFERENCES

1. A.R. Surrey, *J. Am. Chem. Soc.*, **71**, 3354 (1949).
2. H.D. Troutman and L.M. Long, *J. Am. Chem. Soc.*, **70**, 3436 (1948).
3. W.J. Doran and H.A. Shonle, *J. Org. Chem.*, **3**, 193 (1938).
4. French patent M. 1906 (1963); *Chem. Abstr.*, **60**, 2940 (1964).
5. L.C. Chency, R.R. Smit and S.D. Dlinkley, *J. Am. Chem. Soc.*, **71**, 61 (1949).
6. J. Porszasz,*Arzneimittel Forsch.*, **14**, 1343 (1964).
7. P. Hey and G.L. Willey, *Nature*, **198**, 390 (1963).
8. *Perkin, Soc.*, **45**, 518.
9. V.M. Tursin, L.G. Chebotareva and A.S. Sadkov, *Med. Proms. SSR*, **16**, 22–23 (1962); *Chem. Abstr.*, **58,** 11210^{b}, (1963).
10. B. Teichmann, *Z. Chem.*, **5**, 18 (1965).

(*Received*: 1 October 1993; *Accepted*: 14 October 1993) AJC-733